OAK RIDGE National Laboratory

Project ID # VAN016

Transportation Data Program

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2019 U.S. DOE Vehicle Technologies Office (VTO)
Annual Merit Review Meeting

June 10-13, 2019

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for the US Department of Energy

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Overview

Timeline

- Project start date: October 2018
- Project end date: September 2019
- Percent complete: 90%

Barriers

- Barriers addressed
  - *Multi-Year Program Plan 2011 - 2015*

    Section 2.6 Outreach, Deployment and Analysis A, B, C

    Section 3.2 Program Analysis

Budget

- Total project funding

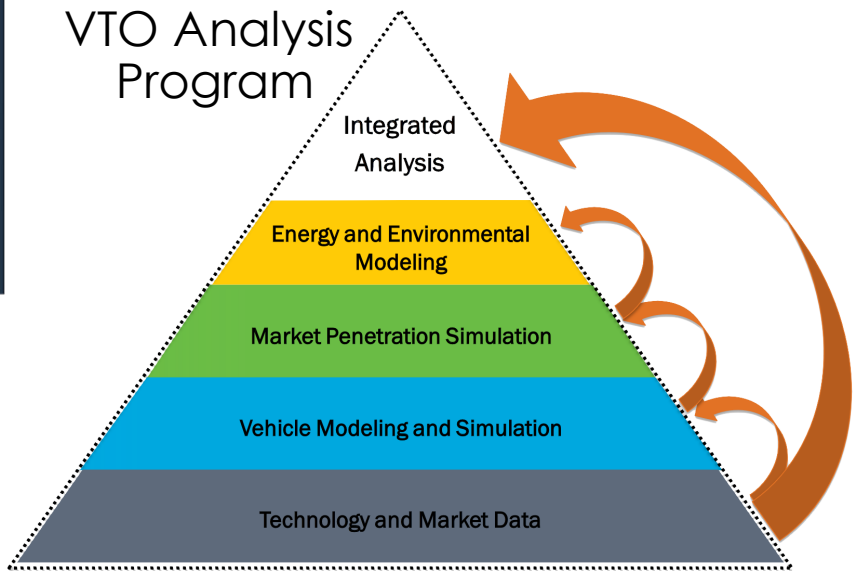
  $450K

Partners

- Oak Ridge National Laboratory (ORNL)
- Argonne National Laboratory (ANL)

Relevance

The objective of the Transportation Data Program is to provide consistent, quality data and information on the transportation sector for VTO researchers and other transportation analysts' use.



The Transportation Data Program disseminates data in:

- National Security
- Economic Growth
- Affordability for Business and Consumers
- Reliability/Resiliency

- Transportation analysts, and VTO staff require current and historical data to affect good decisions for the future.
- Data provide the foundation of the Analysis Program in the pursuit of moving people and goods using the most secure, energy-efficient, and cost-effective technologies.

Milestones

Quarter	Milestone Description	Milestones for the Transportation Data Program FY18	Milestones for the Transportation Data Program FY19
Quarter 1	U.S. E-drive Monthly Sales Report prepared monthly for posting on the E-drive website	Complete	Complete
Quarter 2	Fact of the Week prepared weekly for posting on the Vehicle Technologies website	Complete	Complete
Quarter 3	Figure on comparison of U.S. E-drive annual sales with China/Europe	Complete	Complete
Quarter 4	Draft of Transportation Energy Data Book delivered to VTO	Complete	On track
Quarter 4	Go/no-go milestone Determine if VTO research efforts require continued transportation data program support	Complete	On track

Approach – Data Book

Since 1975

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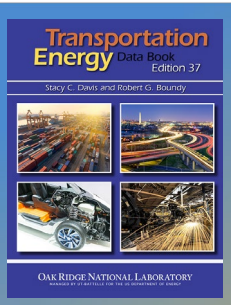
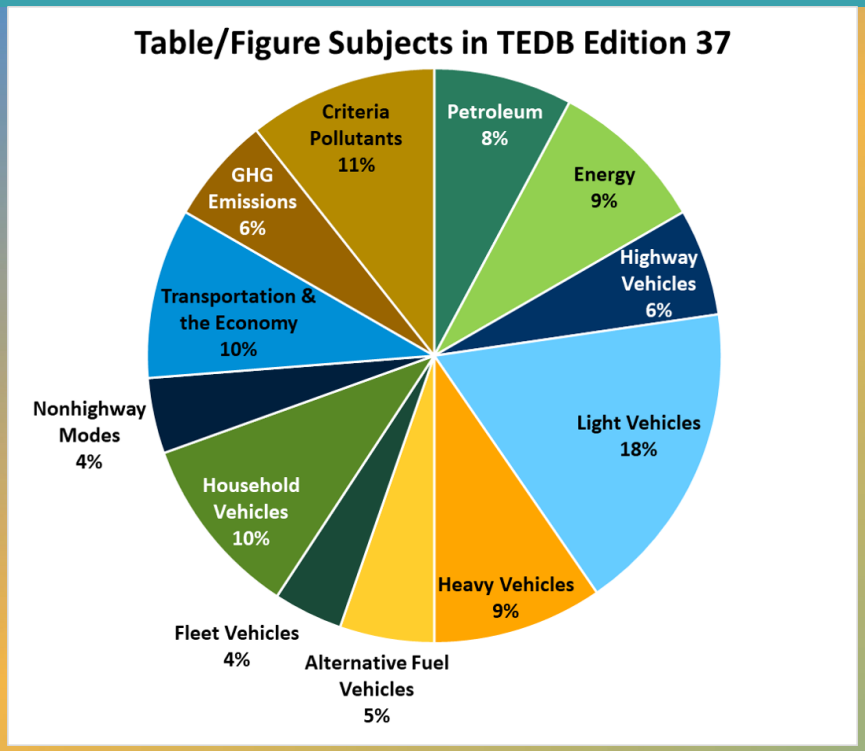


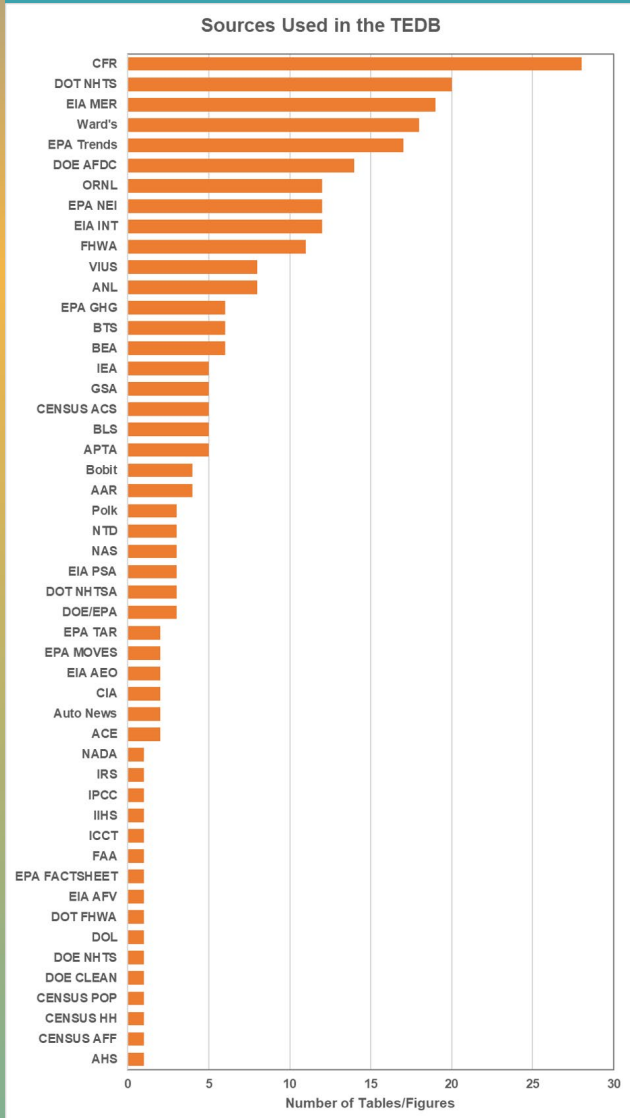
On-line report
https://tedb.ornl.gov

PDF & Excel formats

Twelve Chapters, 218 Tables and 64 Figures



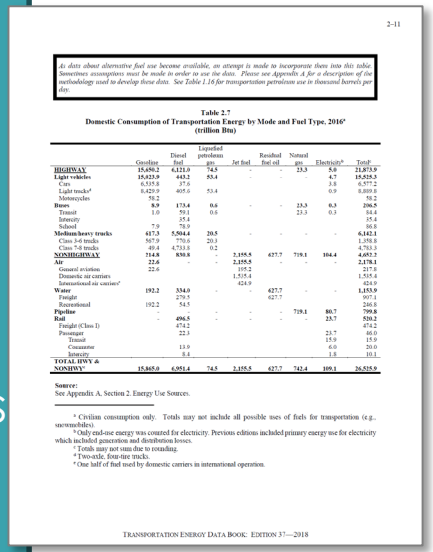
About 50 different sources



Approach – Data Book

Unique "Big Energy Table"

- Energy use in Btu by mode and fuel type
- Appendix A holds sources and assumptions
- About 20 sources
- Added electricity use to light vehicles two years ago (documented estimates)



2-11

As data about alternative fuel use become available, an attempt is made to incorporate them into this table. Sometimes assumptions must be made in order to use the data. Please see Appendix A for a description of the methodology used to develop these data. See Table 1.16 for transportation petroleum use in thousand barrels per day.

Table 2.7
Domestic Consumption of Transportation Energy by Mode and Fuel Type, 2016[a]
(trillion Btu)

	Gasoline	Diesel fuel	Liquefied petroleum gas	Jet fuel	Residual fuel oil	Natural gas	Electricity[b]	Total[c]
HIGHWAY	**15,650.2**	**4,121.9**	**74.5**	-	-	**23.3**	**5.0**	**21,873.9**
Light vehicles	**15,023.9**	**443.2**	**53.4**	-	-	-	**4.7**	**15,525.2**
Cars	6,535.8	37.6	-	-	-	-	1.8	6,577.2
Light trucks[d]	8,429.9	405.6	53.4	-	-	-	0.9	8,889.8
Motorcycles	58.2	-	-	-	-	-	-	58.2
Buses	**8.9**	**173.4**	**0.6**	-	-	**23.3**	**0.3**	**206.5**
Transit	1.0	59.1	0.6	-	-	23.3	0.3	84.4
Intercity	-	35.4	-	-	-	-	-	35.4
School	7.9	78.9	-	-	-	-	-	86.8
Medium/heavy trucks	**617.3**	**5,504.4**	**20.5**	-	-	-	-	**6,142.1**
Class 3-6 trucks	567.9	770.6	20.3	-	-	-	-	1,358.8
Class 7-8 trucks	49.4	4,733.8	0.2	-	-	-	-	4,783.3
NONHIGHWAY	**714.8**	**850.8**	-	**2,155.5**	**627.7**	**719.1**	**104.4**	**4,653.7**
Air	**22.6**	-	-	**2,155.5**	-	-	-	**2,178.1**
General aviation	22.6	-	-	195.2	-	-	-	217.8
Domestic air carriers	-	-	-	1,515.4	-	-	-	1,515.4
International air carriers[e]	-	-	-	424.9	-	-	-	424.9
Water	**192.2**	**334.0**	-	-	**627.7**	-	-	**1,153.9**
Freight	-	270.5	-	-	627.7	-	-	907.1
Recreational	192.2	54.5	-	-	-	-	-	246.8
Pipeline	-	-	-	-	-	**719.1**	**80.7**	**799.8**
Rail	-	**496.5**	-	-	-	-	**23.7**	**520.2**
Freight (Class I)	-	474.2	-	-	-	-	-	474.2
Passenger	-	22.3	-	-	-	-	23.7	46.0
Transit	-	-	-	-	-	-	15.9	15.9
Commuter	-	13.9	-	-	-	-	6.0	20.0
Intercity	-	8.4	-	-	-	-	1.8	10.1
TOTAL HWY & NONHWY	**15,865.0**	**6,951.4**	**74.5**	**2,155.5**	**627.7**	**742.4**	**109.1**	**26,525.5**

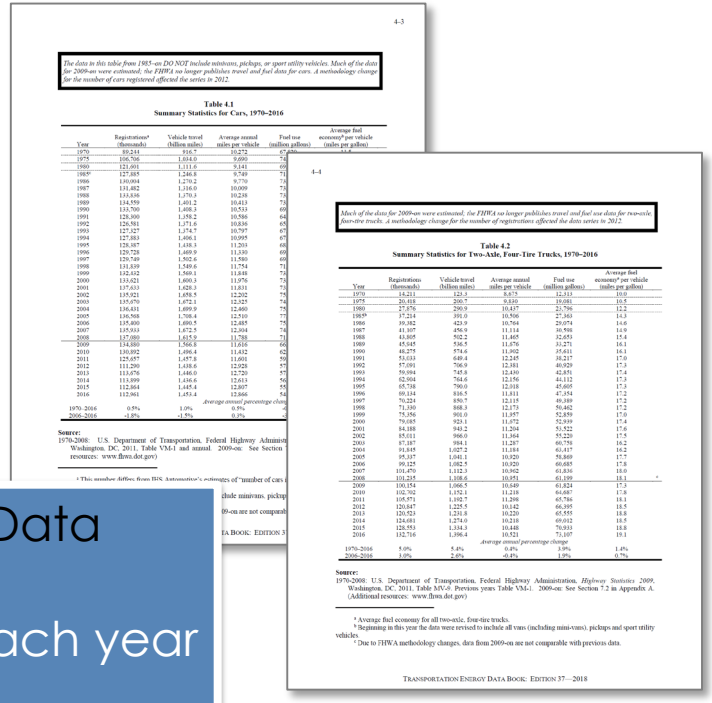
Source:
See Appendix A, Section 2, Energy Use Sources.

* Civilian consumption only. Totals may not include all possible uses of fuels for transportation (e.g., snowmobiles).
[b] Only end-use energy was counted for electricity. Previous editions included primary energy use for electricity which included generation and distribution losses.
[c] Totals may not sum due to rounding.
[d] Two-axle, four-tire trucks.
[e] One half of fuel used by domestic carriers in international operation.

TRANSPORTATION ENERGY DATA BOOK: EDITION 37—2018

Value-Added:

- Combine data to present unique data series.
- Present data from different tables/reports to show a unique perspective.



4-3

The data in this table from 1985–on DO NOT include minivans, pickups, or sport utility vehicles. Much of the data for 2009-on were estimated; the FHWA no longer publishes travel and fuel data for cars. A methodology change for the number of cars registered affected the series in 2012.

Table 4.1
Summary Statistics for Cars, 1970–2016

Year	Registrations[a] (thousands)	Vehicle travel (billion miles)	Average annual miles per vehicle	Fuel use (million gallons)	Average fuel economy[b] per vehicle (miles per gallon)
1970	89,244	916.7	10,272	67,886	13.5
1975	106,706	1,034.0	9,690	74,[illegible]	[illegible]
1980	121,601	1,111.6	9,141	69,[illegible]	[illegible]
1985[c]	127,885	1,246.8	9,749	71,[illegible]	[illegible]
1986	130,004	1,270.2	9,770	73,[illegible]	[illegible]
1987	131,482	1,316.0	10,009	73,[illegible]	[illegible]
1988	133,816	1,370.3	10,238	73,[illegible]	[illegible]
1989	134,559	1,401.2	10,413	73,[illegible]	[illegible]
1990	133,700	1,408.3	10,533	69,[illegible]	[illegible]
1991	128,800	1,358.2	10,586	66,[illegible]	[illegible]
1992	126,501	1,371.6	10,836	65,[illegible]	[illegible]
1993	127,327	1,374.7	10,797	67,[illegible]	[illegible]
1994	127,883	1,406.1	10,995	67,[illegible]	[illegible]
1995	128,387	1,438.3	11,203	68,[illegible]	[illegible]
1996	129,728	1,469.9	11,330	69,[illegible]	[illegible]
1997	129,749	1,502.6	11,580	69,[illegible]	[illegible]
1998	131,039	1,549.6	11,754	71,[illegible]	[illegible]
1999	132,432	1,569.1	11,848	72,[illegible]	[illegible]
2000	133,621	1,600.3	11,976	73,[illegible]	[illegible]
2001	137,633	1,628.3	11,831	73,[illegible]	[illegible]
2002	135,921	1,658.5	12,202	73,[illegible]	[illegible]
2003	135,670	1,672.1	12,325	74,[illegible]	[illegible]
2004	136,431	1,689.9	12,460	75,[illegible]	[illegible]
2005	136,508	1,708.4	12,519	77,[illegible]	[illegible]
2006	135,400	1,690.5	12,485	75,[illegible]	[illegible]
2007	135,933	1,672.5	12,304	74,[illegible]	[illegible]
2008	137,080	1,615.5	11,788	71,[illegible]	[illegible]
2009	134,880	1,566.8	11,616	66,[illegible]	[illegible]
2010	130,892	1,496.4	11,432	62,[illegible]	[illegible]
2011	125,657	1,457.8	11,601	59,[illegible]	[illegible]
2012	111,290	1,438.6	12,928	57,[illegible]	[illegible]
2013	113,676	1,446.0	12,720	57,[illegible]	[illegible]
2014	113,109	1,436.6	12,611	56,[illegible]	[illegible]
2015	112,864	1,445.4	12,807	55,[illegible]	[illegible]
2016	112,961	1,451.4	12,866	54,[illegible]	[illegible]
			Average annual percentage change		
1970–2016	0.5%	1.0%	0.3%	0.2%	1.4%
2006–2016	-1.8%	-1.5%	0.3%	-3.2%	5.1%

Source:
1970–2008: U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics 2008*, Washington, DC, 2011, Table VM-1 and annual. 2009-on: See Section 7.2 in Appendix A. (Additional resources: www.fhwa.dot.gov)

[a] This number differs from IHS Automotive's estimates of "number of cars [illegible] include minivans, pickups [illegible] 2009-on are not comparable with previous data.

TRANSPORTATION ENERGY DATA BOOK: EDITION 37

4-4

Much of the data for 2009-on were estimated; the FHWA no longer publishes travel and fuel use data for two-axle, four-tire trucks. A methodology change for the number of registrations affected the data series in 2012.

Table 4.2
Summary Statistics for Two-Axle, Four-Tire Trucks, 1970–2016

Year	Registrations (thousands)	Vehicle travel (billion miles)	Average annual miles per vehicle	Fuel use (million gallons)	Average fuel economy[a] per vehicle (miles per gallon)
1970	14,211	121.7	8,673	12,513	10.0
1975	20,418	200.7	9,830	19,081	10.5
1980	27,876	290.9	10,437	23,796	12.2
1985[b]	37,214	391.0	10,506	27,363	14.3
1986	39,382	423.9	10,764	29,074	14.6
1987	41,107	456.9	11,114	30,598	14.9
1988	43,805	502.2	11,465	32,651	15.4
1989	45,945	536.5	11,676	33,271	16.1
1990	48,275	574.6	11,902	35,611	16.1
1991	53,033	649.4	12,245	38,217	17.0
1992	57,091	706.9	12,381	40,929	17.3
1993	59,994	745.8	12,430	42,851	17.4
1994	62,904	784.6	12,476	44,112	17.8
1995	65,738	790.0	12,018	45,605	17.3
1996	69,134	816.5	11,811	47,354	17.2
1997	70,224	850.7	12,115	49,389	17.2
1998	71,100	868.3	12,173	50,462	17.2
1999	75,356	901.0	11,957	52,859	17.0
2000	79,085	923.1	11,672	52,939	17.4
2001	84,188	943.2	11,204	53,522	17.6
2002	85,011	966.0	11,364	55,220	17.5
2003	87,187	984.1	11,287	60,758	16.2
2004	91,845	1,027.2	11,184	61,417	16.2
2005	95,317	1,041.1	10,920	58,869	17.7
2006	99,125	1,082.5	10,920	60,685	17.8
2007	101,479	1,112.3	10,962	61,836	18.0
2008	101,235	1,108.6	10,951	61,199	18.1
2009	100,154	1,066.5	10,649	61,824	17.3
2010	102,702	1,152.1	11,218	64,047	17.8
2011	105,571	1,192.7	11,298	65,786	18.1
2012	120,647	1,225.5	10,142	66,395	18.5
2013	120,523	1,231.8	10,220	65,555	18.8
2014	124,681	1,274.0	10,218	69,012	18.5
2015	128,553	1,334.3	10,448	70,933	18.8
2016	132,716	1,396.4	10,521	71,107	19.1
			Average annual percentage change		
1970–2016	5.0%	5.8%	0.4%	3.9%	1.4%
2006–2016	3.0%	2.4%	-0.4%	1.5%	0.7%

Source:
1970–2008: U.S. Department of Transportation, Federal Highway Administration, *Highway Statistics 2009*, Washington, DC, 2011, Table MV-9. Previous years Table VM-1. 2009-on: See Section 7.2 in Appendix A. (Additional resources: www.fhwa.dot.gov)

[a] Average fuel economy for all two-axle, four-tire trucks.
[b] Beginning in this year the data were revised to include all vans (including mini-vans), pickups and sport utility vehicles.
[c] Due to FHWA methodology changes, data from 2009-on are not comparable with previous data.

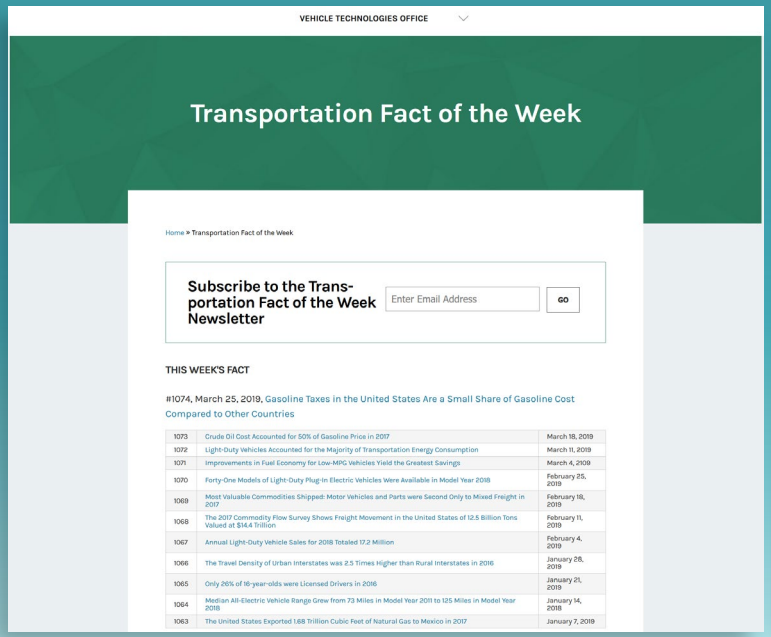
TRANSPORTATION ENERGY DATA BOOK: EDITION 37—2018

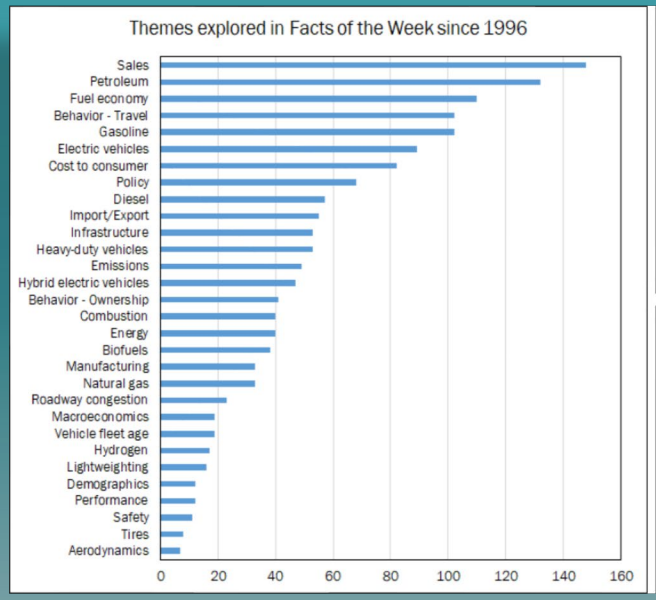
Car and Light Truck Population Data
FHWA discontinued this is 2009;
ORNL/ANL develop estimates each year to continue the series

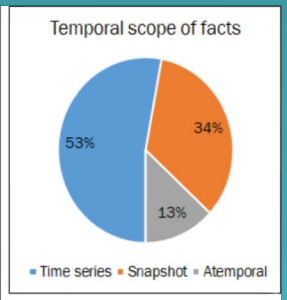
Approach – Fact of the Week (FOTW)

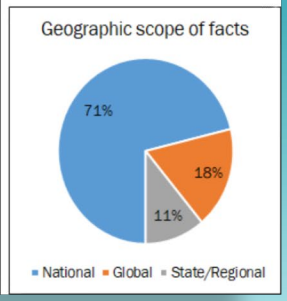
Since 2001

- Facts consist of a graphic, explanatory text, source, and an Excel file.
- Facts are posted on the VTO website every Monday.
- Facts are emailed to an ever-growing subscription list every Monday.









https://www.energy.gov/eere/vehicles/transportation-fact-week

Approach – Data Book & Fact of the Week

Barrier Addressed: Provides consistency to improve analyses of the transportation sector which contribute to policies, programs, and technologies. Provides a wealth of data and information which reduces the burden on VTO analysts to compile the data individually.

- The Data Book is mostly tabular historical data, especially good for modeling use.
- The Fact of the Week is widely varied on topic and source.

Discovery	Due Diligence	DOE Approval	Publication
• Content review of past reports/Facts • Source identification • Data collection from hundreds of sources – From html, Excel, pdf & hardcopy	• Convert units • Perform calculations • Confirm all series revisions • Analyze disparate data • Study definitions • Assemble notes • Create graphics and tabulations • Write accompanying text	• Send to VTO sponsor for approval • Topic and text of Fact reviewed by VTO sponsor & VTO Communications Team members • Contents of TEDB & reviewed by VTO sponsor • Changes made by ORNL accordingly	• Send final Fact & Excel file to VTO website programmer • Program final Fact in GovDelivery system & send email to subscription list • Update TEDB Website (Serve data in Excel & pdf) • Answer questions from the public • Request user feedback

Primary mechanism: Publish data and information in PDF, Excel, and HTML on VTO and ORNL websites for VTO researchers and others to access.

Approach - E-Drive Data & Analysis

Barriers Addressed: Provides readily-used monthly sales by make and model, estimates impact of light-duty electrification, analyzes regional sales patterns to improve modeling of the electric-drive vehicle ecosystem, and supports other DOE programs.

- Provides reference data for vehicle choice modeling and DOE/EERE impact analysis.
- Compares the U.S. with other worldwide leading PEV markets (e.g. China, Europe)
- Tracks technology trends and estimates the impacts of PEV

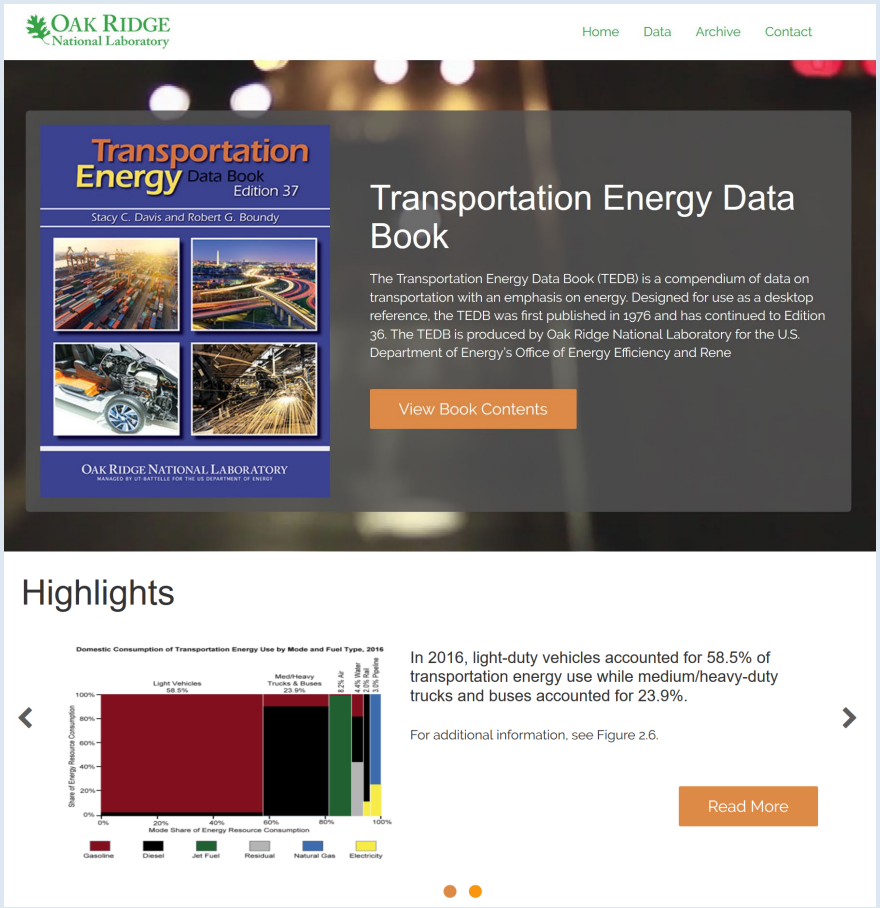
Topic	Data and Analysis Types (Examples)
U.S. E-drive sales	Monthly sales of HEV, PHEV and BEV
International sales	Monthly sales of HEV, PHEV and BEV in China, Europe
Infrastructure	Targets, number of charging stations (by type)
Track projections	Track and summarize PEV projections and OEM announcements

Primary mechanism: Monthly E-drive vehicle sales by make and model of four global markets (Canada, China, Europe, Japan and U.S)

Technical Accomplishments and Progress for the Data Book

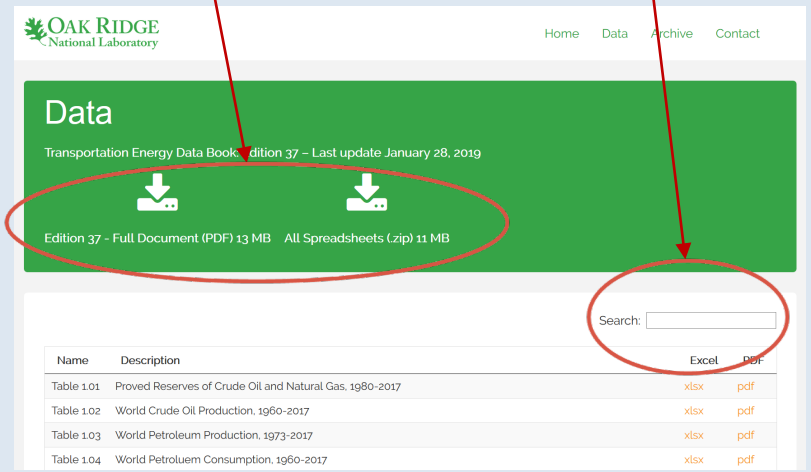
What's New for FY19

- Ten new tables and 12 new figures in the report
- Newly redesigned website with search capability
- New URL https://tedb.ornl.gov
- Rotating highlights from the report on the homepage



On the Data page, download full PDF or spreadsheets

Search by topic for Excel or PDF of specific tables/figures

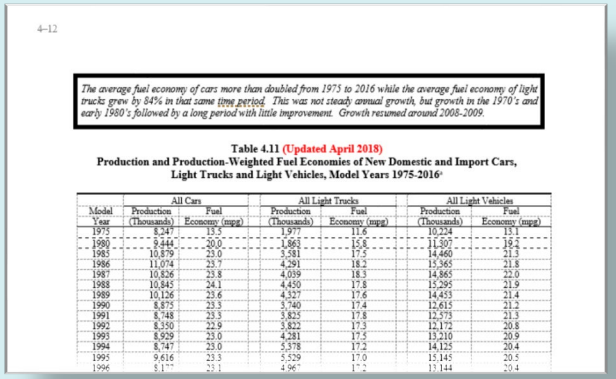


Feedback encouraged at bottom of homepage

Technical Accomplishments and Progress for the Data Book

Data Book updates twice a year

Edition 37 published January 2019
Edition 37.1 published April 2019
Edition 37.2 will be published in August 2019
Edition 38 draft due at end of FY 2019



4–12

The average fuel economy of cars more than doubled from 1975 to 2016 while the average fuel economy of light trucks grew by 84% in that same time period. This was not steady annual growth, but growth in the 1970's and early 1980's followed by a long period with little improvement. Growth resumed around 2008-2009.

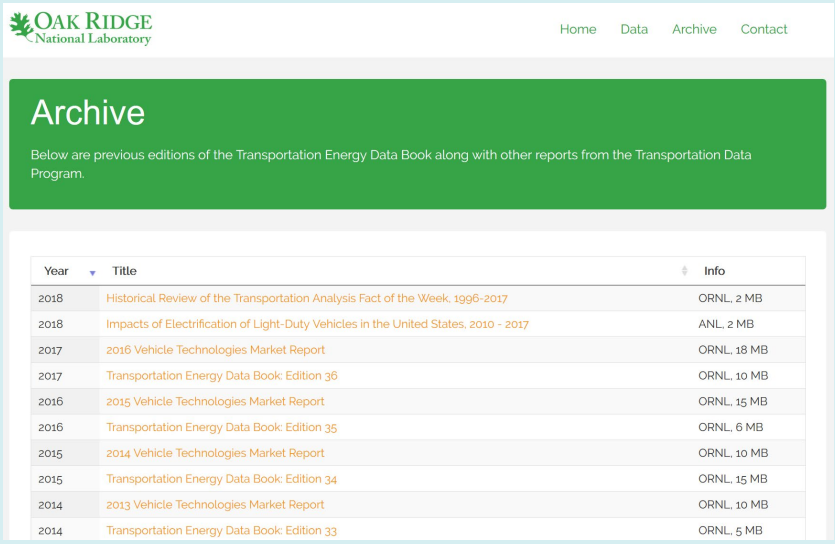
Table 4.11 (Updated April 2018)
Production and Production-Weighted Fuel Economies of New Domestic and Import Cars, Light Trucks and Light Vehicles, Model Years 1975-2016

Model Year	All Cars Production (Thousands)	All Cars Fuel Economy (mpg)	All Light Trucks Production (Thousands)	All Light Trucks Fuel Economy (mpg)	All Light Vehicles Production (Thousands)	All Light Vehicles Fuel Economy (mpg)
1975	8,247	13.5	1,977	11.6	10,224	13.1
1980	9,444	20.0	1,963	15.6	11,407	18.9
1985	10,879	23.0	5,581	17.5	14,460	21.3
1986	11,074	23.7	4,291	18.2	15,365	21.8
1987	10,826	23.8	4,039	18.3	14,865	22.0
1988	10,845	24.1	4,450	17.8	15,295	21.9
1989	10,126	23.6	4,327	17.6	14,453	21.4
1990	8,875	23.3	3,740	17.4	12,615	21.2
1991	8,748	23.3	3,825	17.8	12,573	21.3
1992	8,350	22.9	3,822	17.3	12,172	20.8
1993	8,929	23.0	4,281	17.5	13,210	20.9
1994	8,747	23.0	5,378	17.2	14,125	20.4
1995	9,616	23.3	5,529	17.0	15,145	20.5
1996	8,177	23.1	4,967	17.2	13,144	20.4

Older editions are still accessible

https://tedb.ornl.gov/archives

As well as reports from other parts of the Transportation Data Program



Website links to other parts of the Transportation Data Program

Transportation Fact of the Week

View

E-Drive Monthly Sales

View

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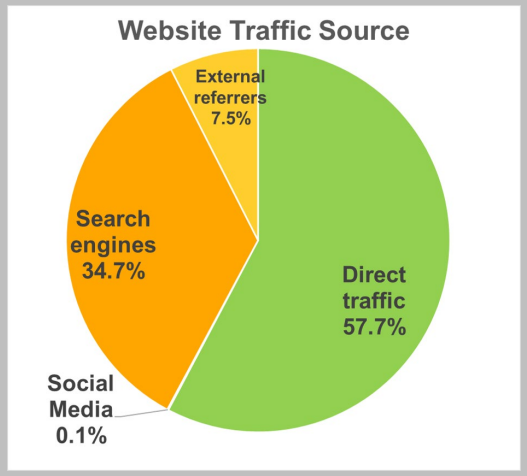
Technical Accomplishments and Progress for the Data Book



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www.eia.gov
en.wikipedia.org
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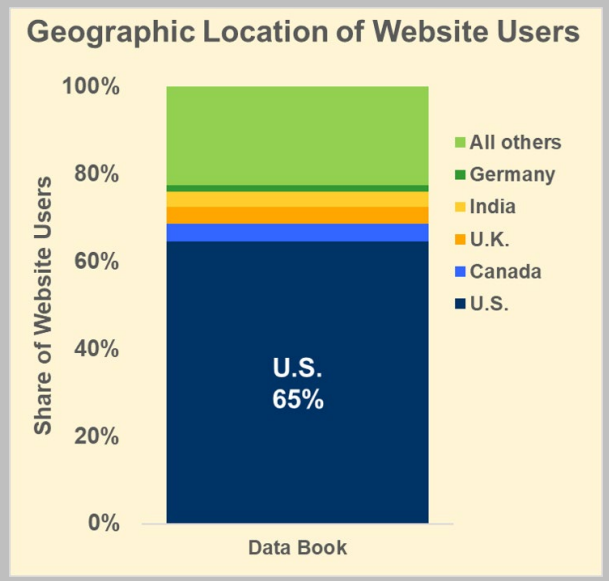
en.m.wikipedia.org
www.statista.com
learnbiofuels.org

Page Views, Downloads, Citations			
Month-Year	**Page Views**	**PDF Downloads**	**XLS Downloads**
October 2018	6,534	599	1,029
November 2018	5,911	509	916
December 2018	4,287	348	794
January 2019	5,417	458	846
February 2019	6,269	31	1,017
March 2019	7,980	28	1,333
Google Scholar Citations			
About 3,120			



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Technical Accomplishments and Progress for the Data Book

Most popular PDF files downloaded

Rank	PDF Files	Description
1	Full_Doc.pdf	Full Document
2	Chapter02.pdf	Energy
3	Chapter04.pdf	Light Vehicles and Characteristics
4	Chapter05.pdf	Heavy Vehicles and Characteristics
5	Quick_Facts.pdf	Quick Facts inside document front cover
6	Chapter03.pdf	All Highway Vehicles and Characteristics
7	Chapter08.pdf	Household Vehicles and Characteristics
8	Chapter11.pdf	Greenhouse Gas Emissions
9	Chapter06.pdf	Alternative Fuels and Advanced Technology Vehicles and Characteristics
10	Chapter01.pdf	Petroleum

Unique "big energy table" and FHWA tables reflected in both lists

Most popular Excel files downloaded

Rank	Excel Files	Description
1	all_spreadsheets.xls	Zip file of all Data Book spreadsheets
2	Table8_03.xls	Household Vehicle Ownership, 1960–2016
3	Table8_01.xls	Population and Vehicle Profile, 1950–2016
4	Table5_02.xls	Summary Statistics for Class 7-8 Combination Trucks, 1970–2016
5	Table4_01.xls	Summary Statistics for Cars, 1970–2016
6	Table8_02.xls	Vehicles and Vehicle-Miles per Capita, 1950–2016
7	Table5_01.xls	Summary Statistics for Class 3-8 Single-Unit Trucks, 1970–2016
8	Table4_03.xls	Summary Statistics for Light Vehicles, 1970–2016
9	Table3_04.xls	U.S. Cars and Trucks in Use, 1970–2016
10	Table2_08.xls	Transportation Energy Use by Mode, 2014–2016
11	Table6_02.xls	Hybrid and Plug-In Vehicle Sales, 1999–2016
12	Figure7_01.xls	Fleet Vehicles in Service, 2006–2017
13	Table2_03.xls	Distribution of Transportation Energy Consumption by Source, 1950–2017
14	Table2_07.xls	Domestic Consumption of Transportation Energy by Mode and Fuel Type, 2015
15	Table8_06.xls	Average Annual Vehicle-Miles, Vehicle Trips and Trip Length per Household 1969, 1977, 1983, 1990, 1995 NPTS and 2001, 2009, 2017 NHTS

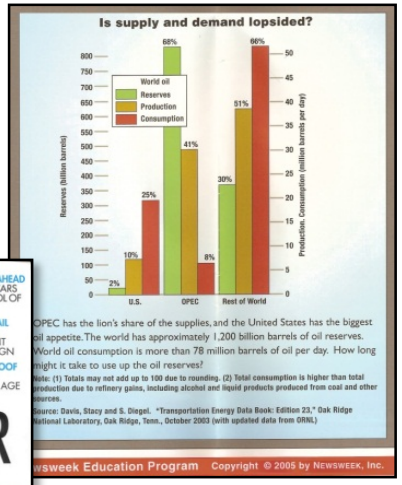
E-drive data →

Technical Accomplishments and Progress for the Data Book

Data collected in the Transportation Data Program provides input data to other VTO programs and other agency's models, such as:

MA3T
GREET
ADOPT
Parachoice
Benefits analysis
DOE eGallon Initiative
DOE Advanced Technology Manufacturing Loans Program
National Science Foundation website
EPA MOVES
EIA NEMS

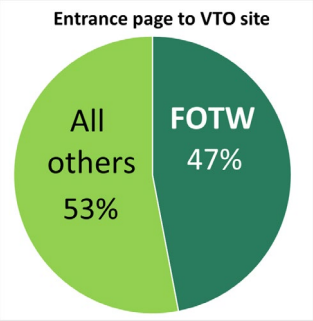
In the past, our data have been cited in Popular Science, Newsweek Education Program, and the Economic Report of the President



The Transportation Energy Data Book is used by Congressional staff, auto manufacturers, state governments, universities (professors & students), libraries, federal agencies, and more.

Technical Accomplishments and Progress for the Fact of the Week

- Fact of the Week content accounted for 101,369 pageviews, or 36% of all VTO site pageviews in the first half of FY 2019.
- About 47% of VTO site visits entered into the site through the Fact of the Week
- In the most visited VTO website pages:
  - *Fact 915, Average Historical Annual Gasoline Pump Price from 1929-2015*
  - *Fact 861, Idle Fuel Consumption of Selected Gasoline and Diesel Vehicles*



Num	Fact of the Week Title	Date
1076	Most New Light-Duty Vehicles Have Transmissions with at Least Six Speeds	April 8, 2019
1075	Most Common Maximum Speed Limit for Trucks in 2017 Was 70 Miles per Hour	April 1, 2019
1074	Gasoline Taxes in the United States Are a Small Share of Gasoline Cost Compared to Other Countries	March 25, 2019
1073	Crude Oil Cost Accounted for 50% of Gasoline Price in 2017	March 18, 2019
1072	Light-Duty Vehicles Accounted for the Majority of Transportation Energy Consumption	March 11, 2019
1071	Improvements in Fuel Economy for Low-MPG Vehicles Yield the Greatest Savings	March 4, 2019
1070	Forty-One Models of Light-Duty Plug-In Electric Vehicles Were Available in Model Year 2018	February 25, 2019
1069	Most Valuable Commodities Shipped: Motor Vehicles and Parts were Second Only to Mixed Freight in 2017	February 18, 2019
1068	The 2017 Commodity Flow Survey Shows Freight Movement in the United States of 12.5 Billion Tons Valued at $14.4 Trillion	February 11, 2019
1067	Annual Light-Duty Vehicle Sales for 2018 Totaled 17.2 Million	February 4, 2019
1066	The Travel Density of Urban Interstates was 2.5 Times Higher than Rural Interstates in 2016	January 28, 2019
1065	Only 26% of 16-year-olds were Licensed Drivers in 2016	January 21, 2019
1064	Median All-Electric Vehicle Range Grew from 73 Miles in Model Year 2011 to 125 Miles in Model Year 2018	January 14, 2019
1063	The United States Exported 1.68 Trillion Cubic Feet of Natural Gas to Mexico in 2017	January 7, 2019
1062	U.S. Exports of Natural Gas Surpass Imports in 2017	December 31, 2018
1061	Vermont Had a Growth Rate of 56.4% for Plug-in Vehicle Registrations per Capita from 2016 to 2017	December 24, 2018
1060	Transportation Services Index Shows Freight at an All-Time High in August 2018	December 17, 2018
1059	California Had the Most Plug-in Vehicle Registrations per 1,000 People in 2017	December 10, 2018
1058	Two-thirds of all Housing Units Had a Garage or Carport in 2017	December 3, 2018
1057	One Million Plug-in Vehicles Have Been Sold in the United States	November 26, 2018
1056	Petroleum Net Imports as a Share of U.S. Consumption in 2017 was at the Lowest Level Since 1967	November 19, 2018
1055	Michigan Continues to Lead in Light-Duty Vehicle Production	November 12, 2018
1054	The Transportation Sector Used 43.4 Billion Cubic Feet of Natural Gas for Vehicle Fuel in 2017	November 5, 2018
1053	Sales of Crossover Vehicles Are Up 116.9% in the Last Ten Years	October 29, 2018
1052	Four Networks Maintain Over 60% of 22,343 Level 2 and DC Fast Charging Stations	October 22, 2018
1051	All-Electric Vehicles Make Up 53% of Plug-In Vehicle Sales to Date	October 15, 2018
1050	Vehicles per Thousand People in China in 2016 was Similar to the United States in 1923	October 8, 2018
1049	The United States Consumed 20% of World Petroleum in 2017	October 1, 2018

http://energy.gov/eere/vehicles/transportation-fact-week

Anyone with an email can subscribe

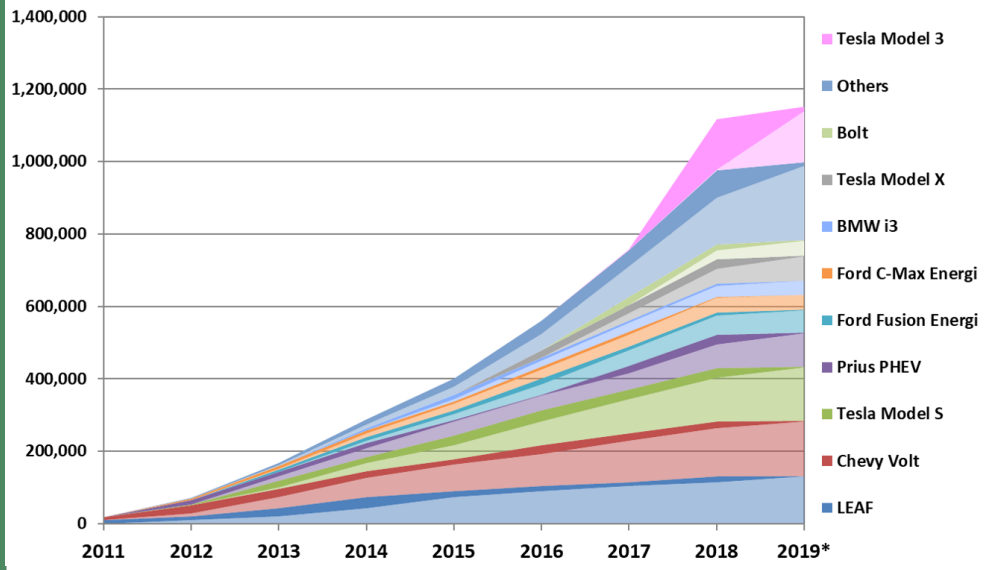
> 17,100 subscribers to the Fact of the Week Monday email distribution

Technical Accomplishments for E-Drive Data

Extensive use of data products by DOE programs and other agencies

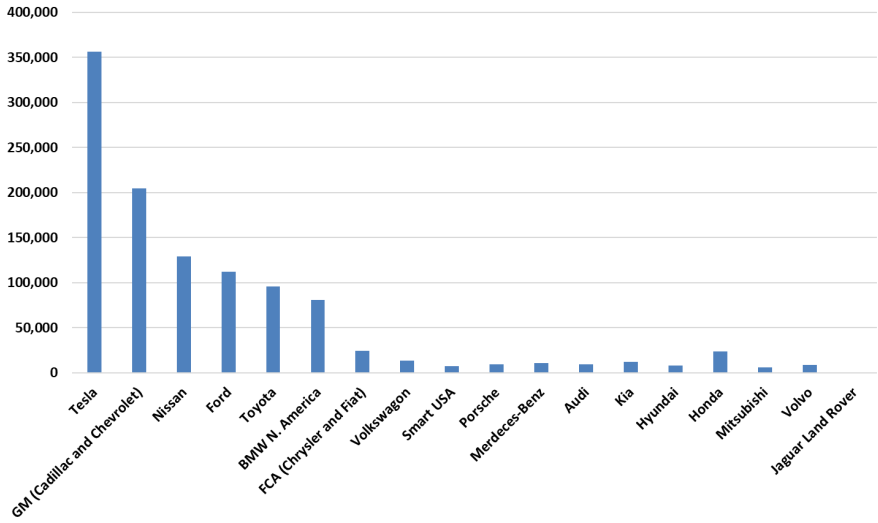
- Successfully published sales on website monthly: https://www.anl.gov/es/light-duty-electric-drive-vehicles-monthly-sales-updates
- Supported DOE/EERE programs and activities such as Transportation Fact of the Week
- Published PEV Impact report in 2017 and 2018
- Supported IEA Global EV Outlook and HEV reports

Cumulative PEV Sales by Model



*through February 2019

Cumulative PEV Sales by OEM



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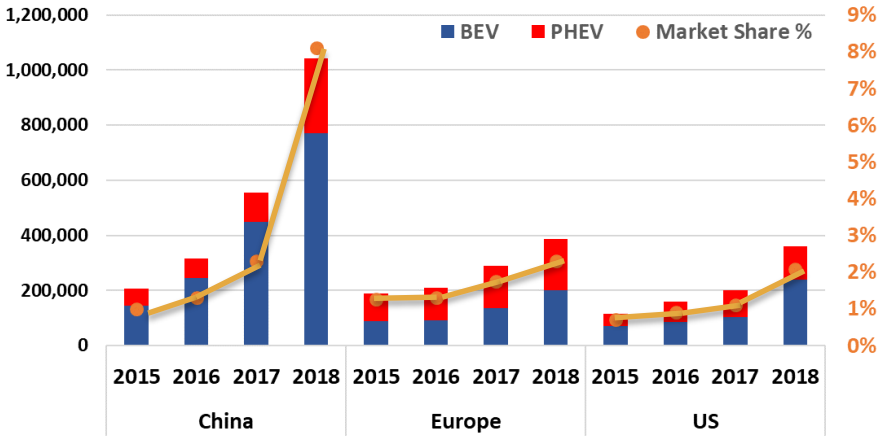
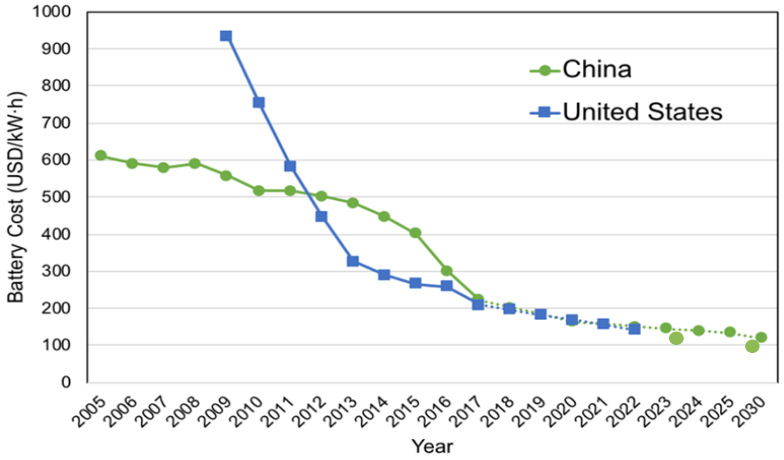
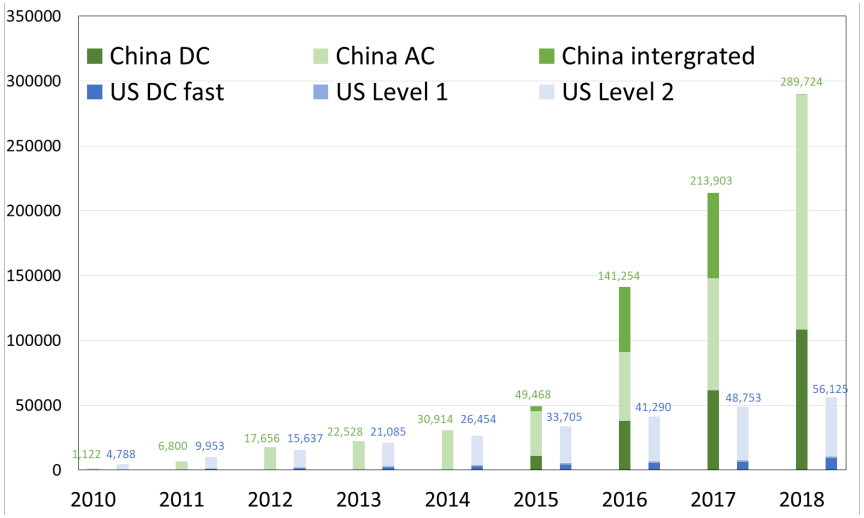
Technical Accomplishments for E-Drive Data

- China: More than 1 Million PEVs in 2019, reaching over 8% passenger vehicle market share
- Europe's PEV market size is similar to the U.S.
- At the end of 2018, China has installed almost 290,000 public chargers, about 35% of them are DC fast chargers
- China and the U.S. have similar targets for battery cost



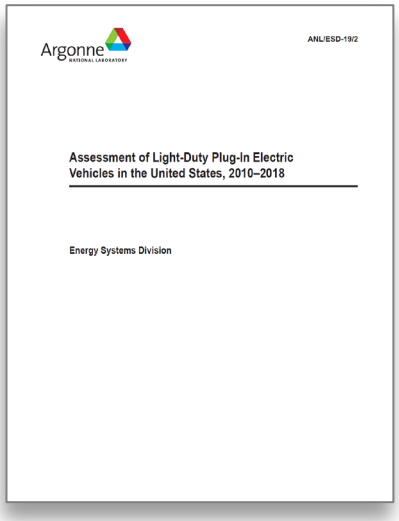




National Laboratory

Technical Accomplishments for E-Drive Data

New 2018 PEV Impact Report has national-scale impacts of PEV including sales, manufacturing, gasoline displacement, electricity use, and more


Argonne NATIONAL LABORATORY

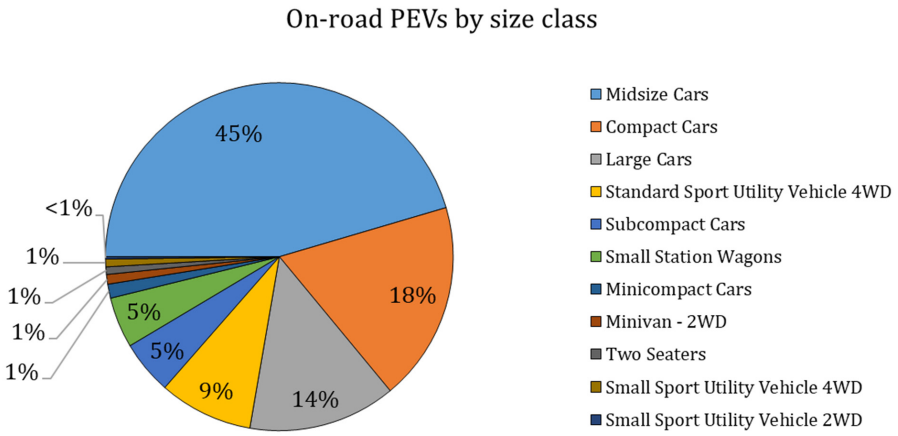
ANL/ESD-19/2

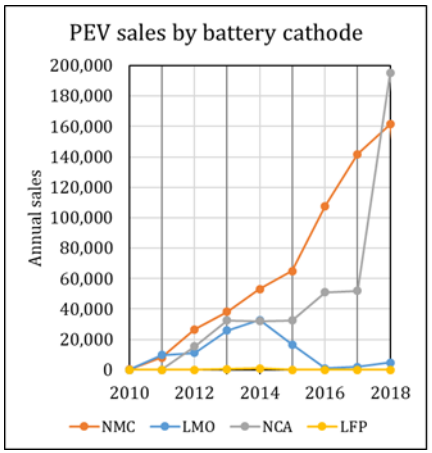
Assessment of Light-Duty Plug-In Electric Vehicles in the United States, 2010–2018

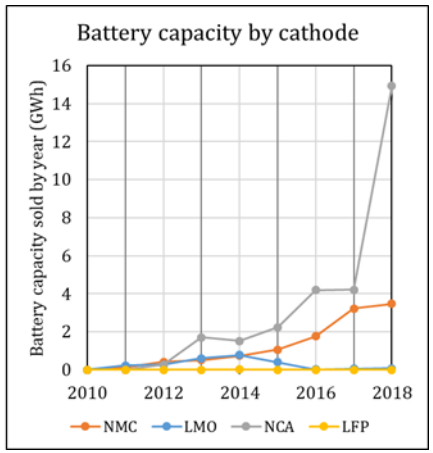
Energy Systems Division

2017 version of this report had frequent external use:

- by World Resources Institute and Electric Drive Transport Association in Congressional testimony,
- by Edison Electric Institute and Center for American Progress in fact sheets and reports
- by Biogas Researchers, Electrification Coalition, and EERE for analyses
- referenced in articles and dissertations
- used as a source for Data Book and multiple Facts of the Week

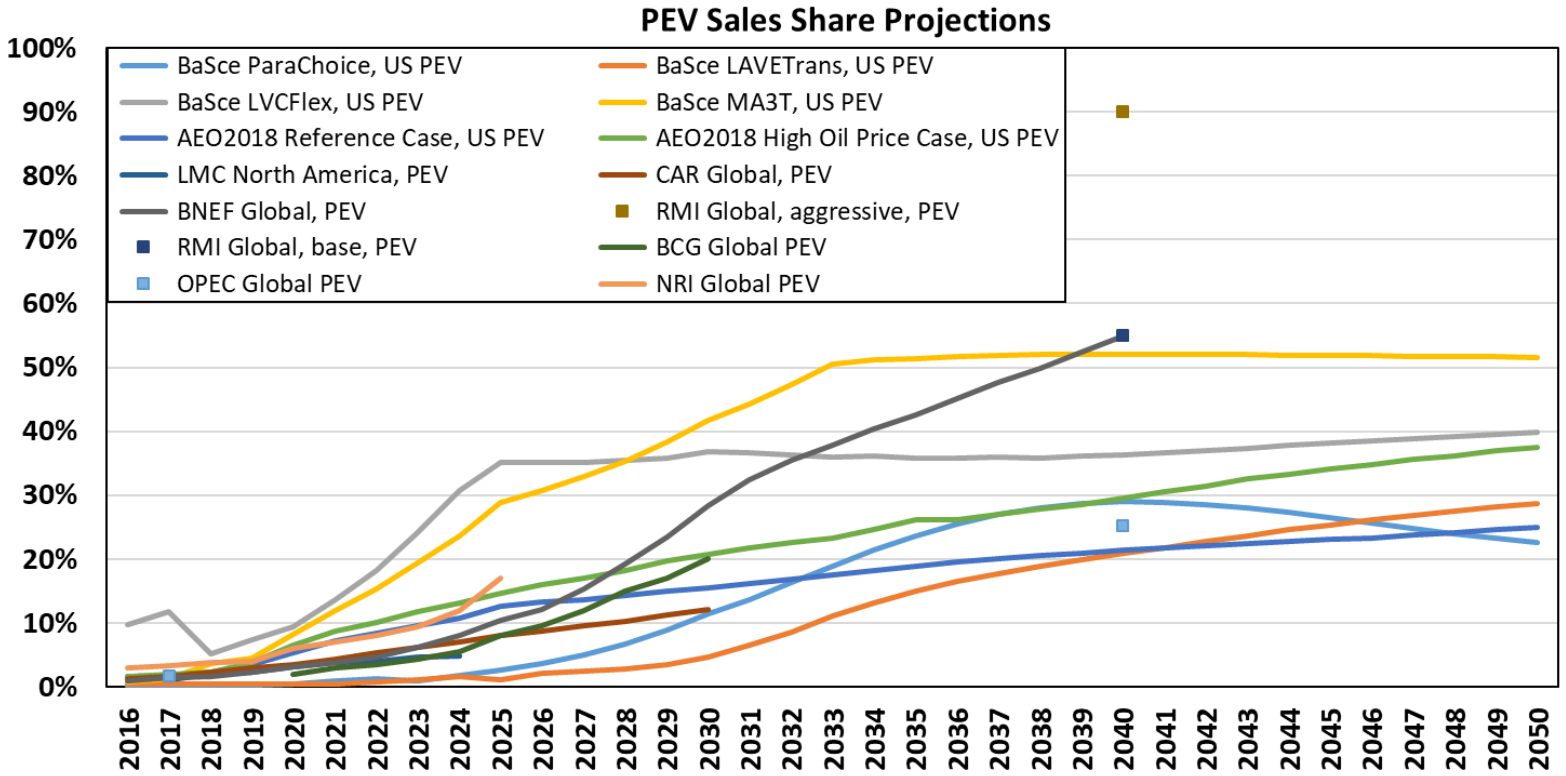






Technical Accomplishments for E-Drive Data

Recent forecasts for PEV sales shares range from 20% to 90% by 2040



Source: D. Gohlke and Y. Zhou, Argonne National Laboratory

New in 2019: DOE eGallon methodology update

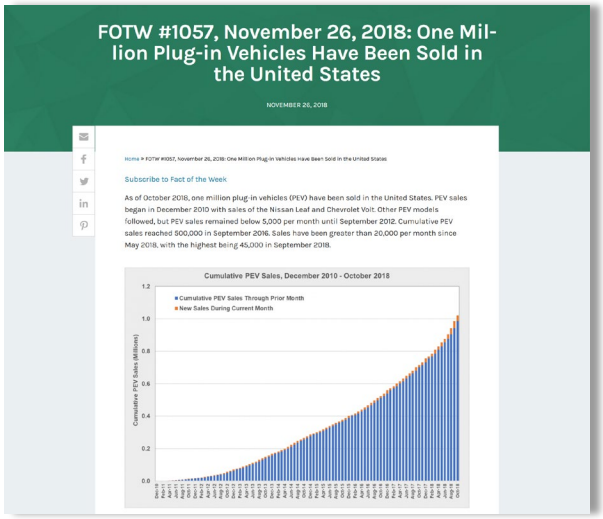
eGallon is a consumer-facing tool on the DOE website to help compare electricity price to gasoline price: eGallon ($/gal) = EP × EC × FE
ANL updated equation terms to 2018 and improved estimates, where possible

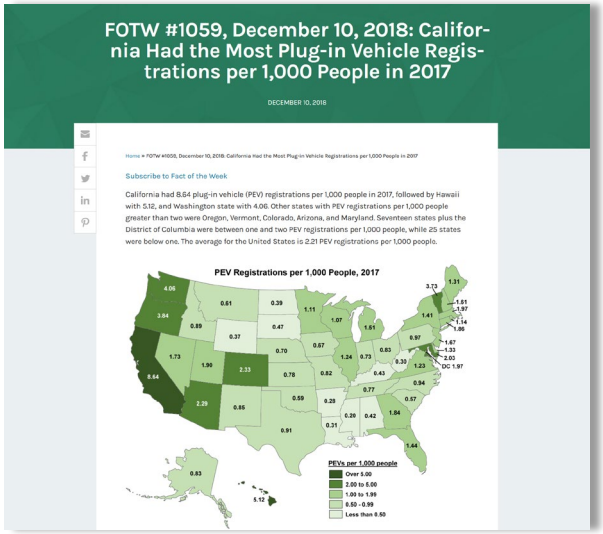
Collaboration & Coordination Among Project Team

ORNL and ANL work together to meet the data needs of the VTO Transportation Analysis Program

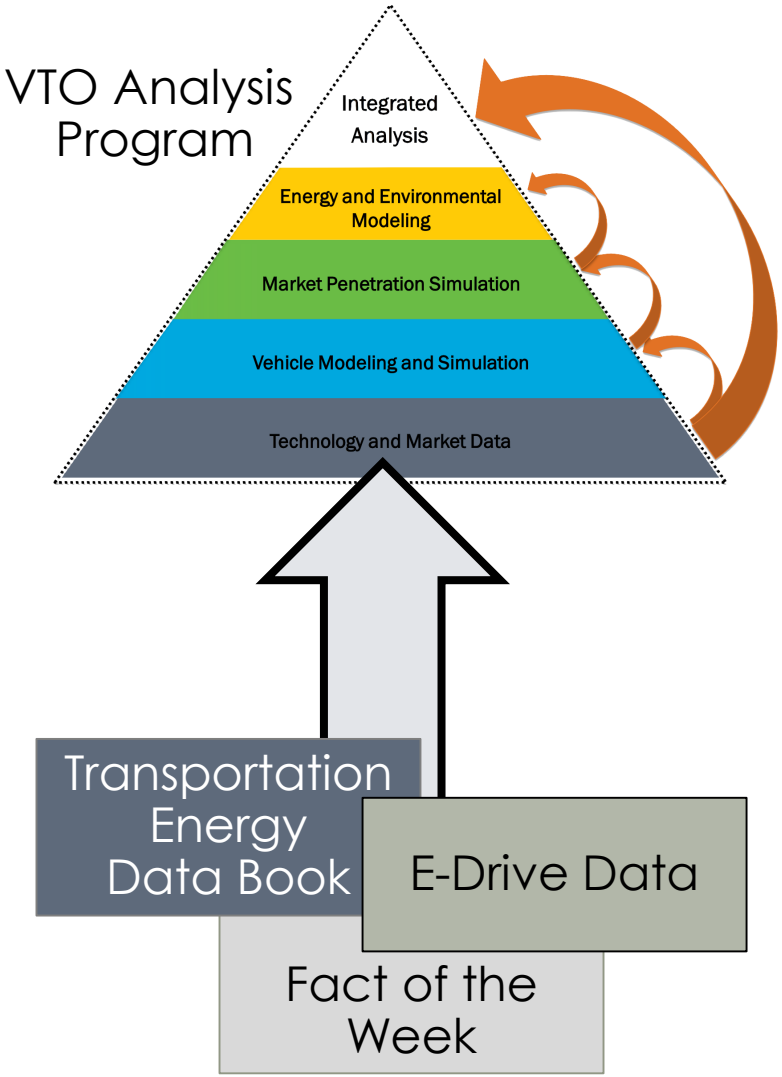
- ANL collaborates with Tsinghua University, Beijing, China, & European Alternative Fuels Observatory, Brussels
- ORNL works with many public & private entities in the data collection process
- ORNL works closely with:
  - VTO staff who approve each Fact of the Week.
  - ANL staff who program and post the Fact of the Week on the VTO website.
- ORNL and ANL regularly collaborate with VTO on the VTO Quarterly Analysis Review (QAR) and the VTO Analysis Newsletter.

Examples of Facts posted that use ANL data as a source





Proposed Future Research



Future plans are to continue the three components of the Transportation Data Program to support the VTO Analysis Program in the next fiscal year.

All future work will be updated to the latest possible data/information available and will include new material on emerging topics of interest.

Feedback from data users will be used to continually improve upon data, data sources, and data serving (websites).

ORNL and ANL will answer ad hoc data requests from VTO staff and Analysis Program team members.

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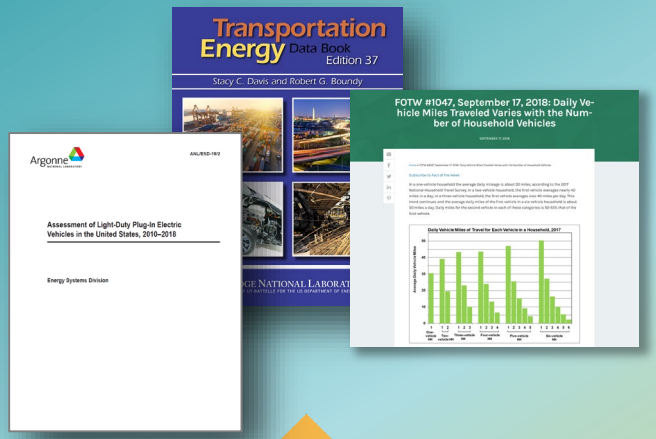
Any proposed future work is subject to change based on funding levels

Summary

Successful weekly, monthly, and annual milestones delivered on-time and within budget – improving over time



Collaboration with government, private sector, academia, & other laboratories

Transportation Analysis

VTO Models (GREET, MA3T, VISION,Benefit analysis, etc.)

Beyond DOE (e.g., EPA MOVES, EIA NEMS, etc.)

New policies, programs and technologies addressing transportation efficiency

Move people and goods using the most secure, energy-efficient, and cost-effective technologies.

ACKNOWLEDGEMENTS

Rachael Nealer, Jacob Ward, & Kate McMahon
Office of Vehicle Technologies
US Department of Energy

Philip Patterson, retired
Formerly of the Office of Vehicle Technologies
US Department of Energy

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